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ABSTRACT

This paper reviews how history teachers use the myriad of tools catalogued under the rubric of technology. This review is limited to secondary settings, and considers the promise of technology, current practice regarding the use of technology in the classroom, and the possibilities in store for creative teachers through technology like hypermedia. The paper discusses the importance of technological and especially computer literacy, and points out that the gulf between what is available and what is being practiced is colossal. If the computer is to be used effectively as a creative tool in the teaching of history, then more than lip service must be paid to the real need of teachers and students. To implement successfully the use of computers in history instruction, the following steps are suggested: (1) development of detailed guidelines for orchestrating research projects; (2) intensive teacher training; (3) design and development of easy to use software that facilitates the task at hand rather than hinders it; (4) planning time for teachers, both collaboratively and individually; and (5) reward systems for innovators and pioneers. More importantly, there needs to be a rethinking of how construction of knowledge is to be taught. The perceptions of time and space that students have, have been fundamentally altered by television. Their links with the past have been broken more than before television. They are too focused on the product and have no concept of the process. The impact of computer instruction on children is a subject for intense teacher training and educational research. An important task for historians is to document the history of technology. Without historical perspective of where technology fits into the historical process, historians cannot understand its impact, or manage technology in the future. Contains 39 references. (DK)

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Educational Technology and the Teaching of History:

Promise, Practice and Possibilities

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Introduction

Ever since B. F. Skinner proposed his teaching machine, we American educators have been intrigued by the possibilities of using machines, and related gadgetry, in the classroom. While social studies classrooms have been the last to experience the magic kiss of technology, historians are certainly the last to recognize the potential of technology (Janger, 1988). The relationship of the social sciences to computers is limited only by imagination (Kendall & Budin, 1987).

Each generation of educators is presented with new elixirs promising cure-alls for our troubles. These ideas promise to make student learning painless and more comprehensive, while increasing productivity and excitement in the classroom. In the 1940s, the radio was the tool of reform. By the 1950s, the television was going to replace the need for new teachers. By the late 1960s, prognosticators said that computers would rule the classrooms, replacing the need for one teacher for every thirty students, and freeing students to explore at will. Cooperative learning, experiential learning, writing and reading across the curriculum, and "hands-on" experiences have crept into the discussion, as well (McKeachie, 1991). We have come to realize, however, that it is not the activity that should occupy so much of the dialogue, but, rather, the theoretical underpinnings concerning the ways people learn and the ways faculties teach. The incredible availability of information coupled with the ability to manipulate, use, and reconstruct that

information in fascinating, unending ways, is forcing educators to reconsider how we teach and how we learn.

Forty years ago, learning theory was dominated by behaviorism. In much of the educational arena today, students still see their principle role in school as taking notes on lectures, reading assignments, and remembering enough to pass the midterm and final exam. Today, cognitive psychologists are telling us that learning and memory are constructive processes involving what is already in the students' heads as much as what we try to put there through lectures, reading assignments, and other educational activities. What this means for teachers is that having an understanding of cognition and thinking processes is equally as important as knowing the subject matter. If we are to teach effectively, we have to bridge the gap between what we want to present and what is already in students' minds (McKeachie, 1991).

Wilkerson (1984) expresses concern about the problems inherent to proposing technological solutions to the problems of public education. Although the potential benefits of the widespread application of media to instruction are supported, emphasis is on the need to define technology as a technique of designing instruction, rather than the more common perception of technology as a new toy to do the same old thing differently. This attitude implies a great deal about the interaction of individuals, materials, and machines, dynamics not a part of the learning equation in the past. In our rush to get computers and

technology into the classroom, we may not have paused enough to consider just what the needs of historians are. The most appropriate computer applications may not be developed because of the lack of needs assessment (Johnson, 1987).

Perhaps the most exciting thing that is happening because of computer use in schools is the intellectual regeneration occurring among the people using computers. Teachers are finding they can think about things in new ways, think about new possibilities with respect to their discipline. Computing requires people to learn to live with change (Kendall & Budin, 1987). Historians must take note.

The Challenge for History Educators

The world has changed drastically, and unexpectedly, throughout the course of history, and educators must take note. In the last decade the rate of change has accelerated. Technology has made our world much smaller. Slightly more than two years ago communists ruled Eastern Europe. Recently, elections held in Poland, Rumania, Hungary and South Africa have changed their nations. Russia has changed from a communist country to a quasi-free enterprise system. In China, students continue to call for democratic reform. East and West Germans have been united into one free Germany. For the first time in history, Israel and other nations of the Persian Gulf area are meeting to hammer out what could be a peaceful solution to a very difficult situation (Clouse, 1991). In the past the world has been filled with international crises. Many of us remember the

construction of the Berlin wall, the Cuban missile crisis, the Afghanistan war, the Vietnam conflict, the United States and Panama disagreement over the canal, the conflict between Argentina and Great Britain over the Faulklands, the Iranian hostage ordeal, the unrest in Nicaragua and other Central and South American countries, and the uneasy relationship between the Philippines and the United States.

These world events have affected every life in this world. Some of these situations have been resolved through the use of power and negotiations, while others have been resolved through military action. Most of us have observed the unfolding of many of these world events through the technology of television. We have seen the Berlin wall crumble and fall. We have witnessed both Eastern and Western Germans hammering away at the obstacle that divided Berlin for many years. We have read in the newspapers about the Russian downing of the Korean Airline flight #007. We have seen on television the execution of Rumanian leaders. We have heard the rhetoric between Sadam Hussain and former President Bush, and we have witnessed a major conflict in the Middle East which involved the Persian Gulf countries as well as the major world powers such as the United States, Russia, Great Britain and France (Clouse, 1992).

All of these world events have had, and will continue to have, a major impact on education. We must develop a model curriculum that utilizes the latest technology, including multi-media education, to expose students in inner city schools,

urban schools, and rural schools, how to cope with and develop entrepreneurship skills in order to live in a global economy. Our instructional systems of technology must permit us to let students analyze major world events, to synthesize opposing viewpoints and to develop rational approaches to reducing world conflict and to live in a global society (Clouse, 1992).

Many of our teachers have not been trained to teach effectively in a changing world with advanced technology. The history, customs, and values of teachers are vastly different from many of the students in their classrooms (Clouse, 1992). Students have grown up in an era of video technology. They are programmed in 30 minute visual imagery. They expect to see a story unfold and find the solution from the time a T.V. program begins until it ends 30 minutes later. It is our challenge in schools to use the imagery of multimedia technology and world events to teach students to think logically about major world events, to synthesize complex and different opinions, and to draw conclusions of their own about how to live and to be effective citizens in the 21st century (Clouse, 1992).

Parents and society as a whole expect our schools to prepare students for the world in which they will live and work. Since technology will be an extremely important part of the 21st century we must teach our children not only to learn with technology but to use technology as a work tool (Clouse & Buckney, 1993).

Technology is currently functioning as a change agent and will continue to function as such, thus causing schools to restructure themselves and for teachers to change from the role of a dispenser of knowledge to a facilitator of learning, and shifting students from a passive listener to an active knowledge worker (Clouse, 1992).

Purpose

The purpose of this paper is to review how the myriad of tools catalogued under the rubric of technology is being used by history teachers. The review will be limited to secondary settings, and will consider the promise technology has made to us, current practice regarding the use of technology in the classroom, and the possibilities in store for creative teachers, e.g., hypermedia.

Promise

Like the gadgetries of the past, computers, interactive video, and other forms of technology have promised us great things. Although social studies is a skill oriented field, the discipline of history has always been bound by knowledge--getting it, remembering it, organizing it, and using it. If technology can assist us in helping students find their niche in history, suspended between the past and the future, on the bridge between what was and what might be, then its promise is more valuable than gold.

As many waves of change, the computer has embellished our vocabulary. We have expanded our language to include RAM, ROM,

byte, bit, hard copy, chip, software, and other strange new and newly defined words and acronyms. But, to be computer literate, teachers and students must grasp a deeper understanding of how computers are influencing life on the planet, what roles the silicon chip plays in the storage and retrieval of information, what computers can and cannot do, hands-on familiarity with software, how to evaluate software, and the ways in which computer skills are involved in word processing, networking, problem-solving, and the like. Most important is to understand that as more and more sophisticated generations of computers make their debut, educators must recognize that computer literacy is an ongoing process (Cohen, 1983; Shane, 1987).

As the seventies dawned, educators realized that students would have to be "computer-literate" (Hefzallah, 1990). Students would need to know how computers might be used in the school and the society at large. Using computers for drill and practice, especially with young children, was seen as a tremendous time-saver for teachers. That simple application grew to include simulations, gaming, and self-tutoring. Teachers would see that computer graphics, as well, held great promise (Albright & Graf, 1992; Cohen, 1983).

As the basic skills movement invigorated the standardized testing programs of the country, the computer took on the construction, storage, and scoring of such. In the field of history, the computer enhanced the questioning by producing

better illustrations and providing endless combinations of questions.

Computer-assisted instruction (CAI) seemed like a panacea, a way to individualize instruction. Computer information networks are just beginning to awake us to the possibilities of teleshopping, newsletters, teleconferencing, databases, and encyclopedia information (Shane, 1987). Internet and the information highway are vivid examples of what the future holds.

The same networking ideas hold tremendous promise for historians. Students' abilities to construct history--individually or collectively--has been forever altered. The ability to collaborate, to share data, to debate, to compare, to see information is enlarged to include anyone who is on-line.

The microprocessor, most recognized in the microcomputer, but also evident in devices such as the teletext, facsimile machine, multi-image projector control system, electronic mail, local networks, teleconferencing systems, massive data bases accessible at a distance, interactive videodisk, CD-ROM, and CD-I, to name only a few, promises to revolutionize how we go about learning. Many of the restrictions that earlier individualized systems of instruction suffered may now be overcome (Manning, Ebner, Brooks, & Blason, 1983; Niemi & Gooler, 1987; Romiszowski, 1988).

Perhaps the greatest promise is that we will have choices to place before our young people. We are no longer limited to what an individual can crowd into his/her head, or what can be stuffed

between the binds of a book. We are faced not only with choosing what we might wish to present to learners, but we are faced with which choices we wish to place before them.

The promise in visual aids is immense. Again, the challenge is in harnessing the responsibility of choice. Students, who live in a visual age, will be challenged with more visual images than are possible to imagine. As a child, I remember the magic of the felt board. It was somehow intriguing as it brought to life for me the words on pages of books. Today, the computer screen can be used in much the same way to bring life to words and stories. Productions of charts and posters--almost instantly--add diversity to how teachers present information and how students can illustrate what they are thinking and what they have learned. However, unlike Diane Ravitch, we do not believe that the only value of computers to historians is visualization. She overlooks the promise technology has for problem solving, inquiry, and interactive thinking and discussion (Ravitch, 1987). Ramos and Wheeler (1989) make a good case for the importance of students developing the ability to recognize historical problems and deliberating about solutions for them. In addition, they describe the exciting possibilities of teaching comparative history using computers.

Comparative history has been traditionally approached by presenting, via the written word, one or more stated opinions or, perhaps, two individuals' different pictorial representations of the same event. Where available, students could compare

contradictory primary sources. The incredible graphic tools computers provide comparative studies exciting new venues.

Cartography is a field whose place in historical study has been greatly enlarged. In addition, graphing, charting immense amounts of data into manageable bits to analyze, suggests that imagination is, indeed, the only limitation in this field. Visualization promises to turn everything into pictures for us. Just as words sometimes overcome us and information is taken for granted, pictures, too, may become routine. The critical factor is the necessary shift from looking at data as just information to viewing information as a tool to further understanding, as raw material to construction of new knowledge.

When telecommunications is added to the discussion, the promise to historians is greatly enlarged. As before, the issue becomes choice. How will we use the choices now at our fingertips? Decisions regarding the use of live television, distance learning, use of broadcast television, closed-circuit television, pre-recorded video, teletext as a medium of instruction, schema for education television systems, and the growing number of choices via cable and satellites certainly challenge the status quo of lesson planning. More than any other aspect of technology, these factors should sound the wake-up call for educators. Technology may well make it possible for students to get a better education at home than in a school (Niemi & Gooler, 1987).

The need for "just-in-time learning" and the development of world-wide learning environments will make it possible for historians to move towards an educational process that can transmit through time, space, culture, age and diverse value systems (Miller & Clouse, 1994).

Already mentioned, simulations and games will continue, with the assistance of interactive media and virtual reality, to be "hot" items for classroom use. The latest versions that combine amazing visualization with computerized information extend the possibilities of these gadgets. Any incident from history can be turned into an instant adventure, one that suddenly appears in full color, with multiple opportunities for interaction. Students may explore the possibilities of the moment, or create their own understanding of the events surrounding what has been but a few words on a page for most of us (Kendall & Budin, 1987; Vlahakis, 1988). Schick (1989) writes about this excitement as he proposes the potential involved in combining word processors, spreadsheets, statistical packages, database management programs and simulations. Historians can make history come alive in their classrooms.

The promises of computer-assisted testing, drill and practice, the conversational or dialogue tutorial CAI, computer-based simulation, database inquiry and learning through programming offer more opportunities today than they did ten years ago. Students may study case histories, court cases, anything that can be stored electronically, at a mere touch of a

finger. Research on conversational and intelligent CAI adds to the anticipation for historians with interest in CAI (Romiszowski, 1988; Scanland & Slattery, 1983). Contemporary software programs will have a built-in system that provides automated data collection, data processing, and reporting needed to cope with the demands of individualized instruction, better known as computer-managed instruction (CMI) (Cohen, 1983).

Interactive video has been around for a while, but has recently come to be used to describe the latest and most sophisticated audiovisual communication system for individual use. A laser videodisk is linked to a micro-computer with graphics and text generation capabilities. Through a special interface, the computer may be used to control the videodisk, transforming it into a random-access store of moving images, stills, and text. The storage capacity is immense, the flexibility of storage is remarkable, easy, and rapid access to specific items of information adds tremendous flexibility. The robustness and long life indicate durability. Copyrights are easy to obtain. But, most importantly, such disks are cheap enough when mass produced, that schools can afford to have them (Hefzallah, 1990; Martorella, 1991; Romiszowski, 1988; Van-Horn, 1988).

Perhaps most exciting are network capabilities. The vision of the future includes that of a networked society--teleconferencing, audiographic teleconferencing, slow-scan video transmission, full-motion videoconferencing, computer

conferencing, videotext and viewdata (Romiszowski, 1988). More than ever, teachers will need to be critical consumers of information (Hefzallah, 1990). Although the promises of technology are rich, the practices may be a different story.

Practice

The practice of using technology as a tool for learning, as a tool of pedagogy, is a broad subject in itself. Over the past ten years, a plethora of computer programs have flooded the market. Drill and practice was the first bandwagon on which social studies teachers jumped. However, there is little proof that teachers altered the amount of time they personally spent on the same type of activities (Ehman & Allen, 1987). Classrooms are still textbook driven and lecture dominated (ASCD, 1990; Bennett, 1990; Ravitch, 1987). A more recent study of social studies teachers in 1990, indicated that a large majority (84%) of teachers used computers sometime during the year (Northup & Rooze, 1990). The critical information learned in this study was that there is a severe need for training. Although teachers know how to use computers for themselves, they are somewhat helpless to do much else. For most teachers, the computer is something to entertain, to enhance lectures, or perhaps something that "steals" valuable instruction time. A dramatic shift in paradigm is necessary for teachers to shift from that perspective to one that integrates the various technological mediums into what they do in classrooms and what students do in school.

Simulations offered new light to boring facts, but the pressure of assessments result, too often, in teachers seeing simulations as peripheral to the main focus of the classroom. With the growing possibilities of distance learning and interactive video, for example, it is important to investigate just how these more elaborate programs might be used in practice. The prototype, and superb example of multimedia devices available to history teachers, is Geography Television (GTV) developed by Lucas Films, Apple Computer and the National Geographic Society. With the photographs, video, film, primary source documents, graphs, charts, maps, music, and statistics stored on 12-inch videodisks, teachers can easily capture and keep their students' attention. When a computer is attached, the possibilities multiply. While learning to access the data takes only a few hours of practice, to use the Storyline program to construct one's own program takes much longer (Fontana, 1991; Peterson, 1990). Rooted in history and geography, the data in GTV can be used by students for research into many areas.

Some educators are establishing computer labs for use by social studies classes. Perhaps a bigger possibility at the college, or high school, level, they are also exciting for middle school children. They encourage active, rather than passive learning. Students write history and illustrate it (Stevens, 1993). Multidisciplinary assignments are easy to design, monitor, and facilitate.

Because high school history teachers serve their apprenticeship at the feet of professors, it is critical for them to lead the way. Richard Jensen, professor of history at the University of Illinois at Chicago says, "We have ambitious plans to get historians out of the Smith Corona age and up to speed" (DeLoughy, 1994, p. A19). He also contends that a growing number of professionals are moving away from books and journals. James B. M. Schick, a history professor at Pittsburgh State University, edits the journal entitled, History Microcomputer Review. The H-NET project, out of the University of Illinois at Chicago, has established twenty E-Mail services for historians. This service alone has already attracted over 4500 subscribers.

Publishers have developed multimedia versions of texts on CD-ROMS (DeLoughy, 1994). Addison-Wesley expects for its first high school text on CD-ROM to be out in 1994. Texas, one of the power houses of the textbook adoption states, cooperated in the development of that text and has relaxed its textbook laws to allow schools to use textbook funds to purchase the CD-ROMS. Such offers hope to the efforts to transform history classrooms.

Possibilities

The possibilities of technology, of course, are endless. Some of the most exciting, practical, programs available to history teachers are hypermedia programs, e.g., Martin Luther King, Jr., (developed by ABC News). A blending of text, graphics, audio, and full-motion video, multimedia databases such as this show great promise for students and teachers at all

levels (Cates, 1991; White, 1991). The ability of hypermedia to anticipate a variety of paths through which individuals might take to learning enhances the depth of programs used by students for many purposes. Information might be stored in a variety of ways. A history resource may allow students to access information alphabetically, numerically, or chronologically. Students may also be able to access information by political issue, by geographical location, or by subject. While one user may seek still images of clothing for a fashion history project, another student may use the same resource for a project dealing with political issues in a presidential campaign. Each may encounter graphics, audio, still images, and motion video segments related to his or her area of interest. Such interactivity encourages problem solving and invites individually customized, inquiry-driven approaches to learning (Albright & Graf, 1992).

The combination of multimedia and hypermedia makes learning an active process. The multi-media available to all teachers, be they in rural areas, or the inner city, is immense. A major question to ask is, "Are some schools priced out of the market?" Within the answer to that question is a much more heavy laded hidden cost, that of human capital and time. Our experiences have been that, too often, people spend unproductive time discussing the lack of money and the desire for the magic panacea, when their energies would be more effectively spent on a discussion of the potential of what is available to them. The

major challenge for the future will be to devise means for realizing the full potential of these technologies, in order to optimize the benefits of emerging technologies for the largest number of people (Burdin & Nutter, 1984; Hefzallah, 1990).

One valid caution concerns the possibility that overwhelmed with the possibilities, some historians might retreat into the position of providing all the information they think their students will need and rebelling against the opportunities technology presents. There are easy ways to combat such. One is to use electronic mail and fax machines for faculty and students to share ideas, assignments, syllabi, and reading/viewing lists. In similar media, students at various schools and colleges might work collectively on research projects. Finally, the clearinghouse ideas, (e.g., ERIC), electronic networks, and the like, must be used at will to share ideas and foster a retooling of how we teach history (Werking, 1991). The potential inherent to that which is available will never mature unless teachers are willing to retrain themselves to orchestrate their classrooms and their learning activities in significantly different ways. Without the financing for that training, and for the materials for the classrooms, the entire discussion is moot.

The potential of sharing information across miles and oceans is endless. Voice-activated technology, hopefully, will break down some of the fear people have of equipment. The increased use of satellites is intriguing. One major problem, though, is the access to the technology to facilitate such. Our

infrastructure is aging. Phone lines in many areas are antiquated today. Many schools cannot pick up traditional television. Equitable access to the technology at hand, and that on the drawing table, is a critical issue.

Summary

One of the most important facts to realize is that the gulf between what is available and what is being practiced is colossal. If the computer is to be used effectively as a creative tool in the teaching of history, then clearly more than lip-service must be paid to the real needs of teachers and students. To successfully implement the use of computers in history instruction, there are several suggestions:

- development of detailed guidelines for orchestrating research projects.
- intensive teacher training (Kupisiewicz, 1984; Scanland & Slattery, 1983).
- design and development of easy-to-use software that facilitates the task at hand rather than hinders it (Johnson, 1987).
- planning time for teachers, both collaboratively and individually (DeLeeuw & Waters, 1986).
- reward systems for innovators and pioneers (Scanland & Slattery, 1983).

While those are good ideas, it is far more important to rethink how we teach construction of knowledge. What is the impact on learning complex subjects like history? How does using

computers change the conceptual basis of history instruction? The perceptions of time and space that our students have, have been fundamentally altered by television. Their links with the past have been broken, much more than before television. They are too focused on the product and have no concept of the process. For example, they do not know how a news program on television is put together. Without forethought, certain kinds of learning will take place at the computer without it being subjected to the kind of critical scrutiny that it should. The impact of computer instruction on children is a subject for intense teacher training and educational research. Just ascertaining the proper kind of instruction is controversial.

An important task for historians is to document the history of technology. Only by seeing this particular "blip" on the historical process will we understand its place--where it came from, its intellectual and social roots, its possible impact on society. If we do not have that kind of historical perspective, it will be difficult to understand its impact, or manage technology in the future. John Dewey believed we must do this if we are to manage machines, instead of vice versa. We must know the history of the impact of technology on society, and also the impact of science, because Dewey regarded science perhaps much more optimistically than we would today (Ravitch, 1987).

The history of efforts to introduce new technologies into the schools is not encouraging. In 1913, Thomas Edison predicted, "Books will soon be obsolete in the schools. Scholars

will soon be instructed through the eye. It is possible to touch every branch of human knowledge with the motion picture" (Cuban, 1986, p. 11). Film never fulfilled its promise, because of the problems getting and using the equipment, as well as the problem of affording the equipment. Many years ago radio made the same boast, but never fulfilled its promise. Instructional television also had limited success when it began in the 1950s, partially because educators did not understand the dynamics of the media and partially because of scheduling and cost (Ravitch, 1987).

The computer is doing better already. Why? One guess is that the computer has distinctive advantages over the other media as a tool of instruction, because of the possibilities for individualized instruction and the interactive component. The computer does not have an "audience." It has users and it demands active participation. At the most superficial level, the computer is a toy. At the most sophisticated level, computers provide powerful systems for storage and retrieval of information, making them essential in the functioning of the modern society.

What is on the horizon? Assuming that we can inform the teacher corps about what is coming in the field of educational technology, will there be money to buy it and use it? More importantly, will the present group of historians be willing to step out of their role as "sage on stage" and restructure the classroom environment to include students' use of multiple forms of technology?

It is no exaggeration to say that technology is casting a long shadow over our culture--the label "information age" has become trite. The transformation has resulted from dramatic technological development and the corresponding centrality of information to the personal and professional lives of many people. The situation represents a shift from the development of technologies that emphasize production to the development of technologies, notably computers and telecommunications, that help determine the very nature of the information society.

The social transformation that is occurring poses some important questions for society in general and for adult learners in particular. What can be done to prepare for life in a world undergoing constant transformation due to increasingly sophisticated technologies? How can those technologies and information-based systems be used to influence positively what and how learners learn, and with what consequences? What is the relationship between the transformation of our lives by technology and the resulting social changes? For educators, the challenge to modify how we perceive curriculum and instruction is stronger than ever. If we do not embrace technology and use it to restructure the educational process, the public may well remove their trust from us and create new vehicles for socializing young people.

The challenge for historians is similar. Those who are successful, both within the profession and as instructors, will have to be proficient in their use of the whole range of tools

available to them via technology. In addition, historians must document that modulation.

References

Albright, M. J., & Graf, D. L. (1992). Teaching in the information age: The role of educational technology. San Francisco: Jossey-Bass.

Bennett, J. A. (1990). The utilization of instructional media and technology in the teaching of U.S. history: A research report. A paper presented at the meeting of the National Social Science Association (Ft. Lauderdale, FL, November 2, 1990).

Burdin, J. L., & Nutter, N. (1984). Inventing the future: Options and strategies for educators. Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education (36th, San Antonio, TX, February 1-4, 1984).

Cates, W. M. (1991). An instructional designer's evaluation of the ABC news interactive package: Martin Luther King, Jr. Social Education, 55(3), 165-168.

Clouse, R. W. (1992). Entrepreneurship education for a global economy in the 21st century. Paper presented at the 10th annual International Entrepreneurship Education Forum, Lake Tahoe, Nevada.

Clouse, R. W. (1992, Spring). Teaching and learning with computers: A classroom analysis. Journal of Educational Technology Systems. 20(4).

Clouse, R. W., & Buckney, C. (1993, Winter). School-business partnership programs: Successful cases and future directions. The Journal of Private Enterprise, 9(2).

Cohen, V. B. (1983). What is instructionally effective microcomputer software? Journal of the School of Education/Indiana University, 59(2), 13-27.

Computer "revolution" on hold. ASCD Update. November, 1984, 4-5.

Cuban, L. (1986). Teachers and machines: The classroom use of technology since 1920. New York: Teachers College Press.

DeLeeuw, G., & Waters, N. M. (1986). Computerized atlases: The potential of computers in social studies. History and Social Science Teacher, 22(1), 6-14.

DeLoughy, T. J. (1994). History, post-print. The Chronicle of Higher Education, 40(19), A19-A20.

Ehman, L. H., & Allen, D. G. (1987). Computer-based education in the social studies. Bloomington, Indiana: Social Studies Development Center.

Fontant, L. A. (1991). GTV: A geographic perspective on American history. Social Education, 52(4), 221-222.

Hefzallah, I. M. (1990). The new learning and telecommunications technologies: Their potential applications in education. Springfield, Illinois: Charles C. Thomas.

Janger, S. (1988). A call for innovation. Social Education, 52(6), 463.

Johnson, M. E. (1987). Computers and database management in the history curriculum. History and Social Science Teacher, 22(3), 149-151.

Kendall, D. S., & Budin, H. (1987). Computers for intellectual regeneration. Social Education, 51(1), 34-37.

Kupisiewicz, C. (1984). School and the mass media. Prospects, 14(1), 11-21.

Manning, D. T., Ebner, D. G., Brooks, F. R. & Balson, P. (1983). Interactive videodisks: A review of the field. Journal of the School of Education/Indiana University, 59(2), 28-42.

Martorella, P. H. (1991). Harnessing new technologies to the social studies curriculum. Social Education, 55(1), 55-57.

McKeachie, W. (1991). How teachers teach. How students learn. Proceedings of Teaching and technology: The impact of unlimited information access on classroom teaching (pp. 1-14). Ann Arbor, Michigan: The Pierian Press.

Miller, C. D., & Clouse, R. W. (1994). Technology-based distance learning: Present and future directions in business and education. Journal of Educational Technology Systems, 22(3), 191-204.

Niemi, J. A., & Gooler, D. D. (1987). Technologies for learning outside the classroom. San Francisco: Jossey-Bass.

Northup, T., Barth, J. & Kranze, H. (1991). Technology standards for social studies: A proposal. Social Education, 55(4), 218-221.

Peterson, G. A. (1990). Good education and good entertainment. New York: National Geographic Society.

Ramos, D., & Wheeler, R.A. (1989). Integrating microcomputers into the history curriculum. History Teacher, 22(2), 177-178.

Ravitch, D. (1987). Technology and the curriculum: Promise and peril. In M. A. White (Ed.), What curriculum for the information age? (pp. 25-36). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Romiszowski, A. J. (1988). The selection and use of instructional media: For improved classroom teaching and for interactive, individualized instruction. Second Edition. New York: Nicholas Publishing.

Scanland, W., & Slattery, D. (1983). The impact of computer-based instruction upon teachers: Two perspectives. Educational Technology, 23(11), 7-12.

Schick, J. B. M. (1989). Computing: Looking forward to 2001 from 1989. Teaching History: A Journal of Methods, 14(2), 70-77.

Shane, H. G. (1987). Teaching and learning in a microelectronic age. Bloomington, Indiana: Phi Delta Kappa Educational Foundation.

Skinner, B. F. (1958). "Teaching machines." Science, 128, 969-977.

Stevens, L. (1993). A social studies computer lab. Social Education, 57(1), 8-10.

Van-Horn, R. (1988). Isn't it time for videodisks to come to school? PTA-Today, 13(6), 22-25.

Vlahakis, R. (1988). The computer-infused social studies classroom. Classroom Computer Learning, 9(3), 58-61.

Werking, R. H. (1991). How teachers teach, how students learn: Doing history and opening windows. Library-Hi-Tech, 9(3), 83-86.

White, C. S. (1991). An instructional designer's evaluation of the ABC news interactive package: Martin Luther King, Jr. Social education, 55(3), 165-168.

Wilkinson, G. (1984). Excellence through educational technology: Some prior considerations. Syracuse, New York: ERIC Clearinghouse on Information Resources.